Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

The book occupies a unique place in the chemical world—similar books have been written in metallurgy—and it is hoped it will incite others to publish similar ones. It is most excellent and can be warmly recommended to all interested in seed oils.

A. H. Gill

SCIENTIFIC JOURNALS AND ARTICLES

The Journal of Biological Chemistry, Vol. VII., No. 5, issued May 20, contains the following: "The Determination of Small Quantities of Iodine with Special Reference to the Iodine Content of the Thyroid Gland," by Andrew Hunter. A method for iodine estimation consisting in combustion with sodium and potassium carbonates and potassium nitrate; conversion of iodide to iodic acid by chlorine; liberation of iodine by potassium iodide and titration of iodine by this sulphate. Details of the method have been carefully worked out and its limits of accuracy clearly defined. "Concerning the Relative Magnitude of the Parts Played by the Proteins and by the Bicarbonates in the Maintenance of the Neutrality of the Blood," by T. Brailsford Robertson. A confirmation of Henderson's results which showed that the bicarbonates of blood are more efficient in the neutralization of acid than are the proteins. "On the Refractive Indices of Solutions of Certain Proteins," by T. Brailsford Robertson. A formula showing the relation between refractive indices of solutions of ovomucoid and their concentrations is given. The change in the refractive index of the solvent brought about by adding 1 gram of ovomucoid to 100 c.c. is 0.0016; in case of ovovitellin, 0.0013. "The Origin of the Brown Pigments in the Integuments of *Tenebrio Molitor,*" by Ross Aiken Gortner. Experiments are described which show that the pigmentation is the result of the interaction of an oxydase with a chromogen. The oxydase can be extracted from the tissue and is active only in the presence of oxygen. The chromogen is not precipitated by phosphotungstic acid; it is present only in minute amounts in the tissue at any one time. "Autolysis of Fertilized and Unfertilized Echinoderm Eggs," by E. P. Lyon and L. F. Shackell. Fertilization exercises little if any effect upon the autolysis of *Arbacia* eggs. "Studies of the Influence of Various Dietary Conditions on Physiological Resistance—I., The Influence of Different Proportions of Protein in the Food on Resistance to the Toxicity of Ricin and on Recuperation from Hemorrhage," by Nellis B. Foster, M.D. An attempt to determine in experiments upon dogs whether the vital resistance can be influenced by protein or non-protein diet. Results were indecisive.

NOTES ON METEOROLOGY AND CLIMATOLOGY

A thunder-storm observatory has recently been established in Spain by Señor G. J. de Guillen Garcia. By means of a wireless telegraph instrument, the electromagnetic waves set up by lightning discharges are detected graphically and acoustically, the changes in the intensity and the distinctness of the sounds produced in the receiver giving the observer a clue as to the probable path of the storm and the rate of its movement. After a sufficient amount of data have been obtained it is hoped that forecasts of these storms will be made possible.

The promotion of Robert DeCourcy Ward to a professorship of climatology at Harvard University probably marks an epoch in the progress of climatology in the United States, as it is the first instance of an appointment to a full professorship in which the appointee is to devote his whole time to the teaching of the science. In the closely allied field, meteorology, Harvard also has a full professorship, Professor A. Lawrence Rotch, director of the Blue Hill Observatory, having received his appointment in 1906.

While meteorological observations will receive but secondary consideration in the Mount McKinley expedition headed by Professor Herschel C. Parker, of Columbia University, they will not be neglected. Several portable instruments will be carried by the climbers, and a minimum thermometer will

be left at the summit, if that height is reached. Besides these, numerous recording instruments will be kept in constant operation at the base of supplies, a station just below the steeper part of the mountain. A comparison of the records obtained near the summit and at the base during the several months likely to be spent there will doubtless be of great value, and when the results are published it is not unlikely that they will form a distinct contribution to American mountain meteorology.

AMONG the eleven scientists whose names have been submitted for consideration in the next election to the Hall of Fame in New York city are those of Joseph Henry and Matthew F. Maury. The distinguished services rendered by these men to meteorology and climatology, as well as to other sciences, deserve the attention of the electors, and the selection of their names would at best be but a tardy recognition of pioneer American genius.

IN SCIENCE of March 11, reference was made to the changed character of *The Monthly Weather Review* of the United States Weather Bureau. The bureau now publishes three journals, *The Mount Weather Bulletin,* for scientific papers, *The Hydrological Journal,* reporting river-flow, floods and discharges, and *The Monthly Weather Review,* for climatological and engineering data. The first, a quarterly, is somewhat technical and is devoted largely to reports of the numerous researches being carried on at Mount Weather, while it is aimed to make the last a climatological summary and a great national engineering journal, in view of the growing interests in water resources. As it is a question whether or not it is proper for the government to expend public money for the maintenance of a popular or educational monthly, no journal of that nature is published.

BOOKS of especial interest to students of meteorology and climatology which have just been published or which will soon appear are as follows: "Descriptive Meteorology," Professor W. L. Moore; "Solar Researches," Dr. G. E. Hale; "Wind Pressure," Dr. T. E. Stanton; "Climates of the British Possessions," Dr. W. N. Shaw, and "Meteorology: Practical and Applied," Sir John W. Moore, new edition, illustrated.

REPORT has recently been made of the wireless transmission of meteorological observations made conjointly by the weather services of Germany and England during the months of February, March and April, and again in August and September, 1909. Vessels in the North Atlantic Ocean reported observations made at 7 A.M. and at 6 P.M., Greenwich time, to the coast stations of the Marconi Wireless Telegraph Company by means of an especially devised code. Even after making special efforts toward rapid transmission in the second series, but 43 per cent. of the evening observations, and less than 8 per cent. of the morning observations arrived in time to be of value. In commenting upon the results, "Prometheus" states that during the months of August and September not a single prediction of the Hamburg Weather Bureau was appreciably influenced by a wireless message. This may possibly have been due to the presence, frequently observed, of a great high pressure area extending westward from the British Isles, a phenomenon characteristic of spring and autumn. Under these conditions the distribution of pressure gives but little suggestion as to the coming weather in central Europe. It was found that when the pressure observations contained in the tardy messages were plotted after their receipt, in most instances there was no marked deviation from the distribution over the ocean as originally deduced from observations in Iceland and the Azores. In view of these facts it is not probable that further experiments of the kind will be made for a time, at least not until wireless telegraphy has advanced to a stage where messages can be transmitted with considerably greater speed.

LICK Observatory Bulletin, Number 169, contains a report of the expedition made to the summit of Mount Whitney last autumn when spectrograms of Mars and the moon were obtained under especially favorable cir-

cumstances. According to Hann's empirical formula for the distribution of water vapor in relation to altitude, 0.79 of the terrestrial water vapor is below 4,420 meters, the height of the summit, making the latter an admirable location for the experiments. The meteorological observations made by Professor Alexander McAdie, of San Francisco, who was detailed by the chief of the United States Weather Bureau to accompany the expedition, include records of relative humidity of but 1 per cent., or an absolute humidity of 0.06 gram per cubic meter. Professor W. W. Campbell, the director of the expedition, says: "We may feel satisfied, however, that an observer could scarcely hope for conditions more favorable for the solution of the problem before us, than those existing on the nights of September 1 and 2 on Mount Whitney; especially toward the middle of these nights, when Mars and the moon were near the meridian. Not only was the vapor in the air strata lower than 4,420 meters completely eliminated from the problem, but the vapor density at 4,420 meters was almost a vanishingly small fraction of the densities at all the observations where the Martian spectrum had previously been investigated."

In the recently issued report of the Smithsonian Institution mention is made of a Hodgkins grant for the erection of a small stone shelter on the summit of Mount Whitney, for the use of investigators during the prosecution of researches on atmospheric air. Mr. C. G. Abbot, the director of the Astrophysical Observatory of the Smithsonian Institution, began his observations there last summer, and obtained important data in the determination of the solar constant.

There has recently been placed on permanent exhibition in the Geological Museum of Harvard University, a model, in plaster of paris, of the mean hourly temperatures of Boston, Mass., which is probably the first of its kind. This model was made by the compiler of these notes as a part of the regular work in the research course in climatology given at Harvard by Professor R. DeC. Ward. It is two feet long and one foot wide, and its three dimensions show months, hours and temperatures. On one of the vertical sides lines are drawn, at equal distances apart, to show the twenty-four hours, and on the next vertical side twelve lines represent the months. The heights of the upper surface of the model, above the base, represent the mean hourly temperatures. This upper surface is divided into twelve areas, representing different degrees of heat and cold, and each area is colored, different shades of red being used for the higher temperatures, and different shades of blue for the lower. By means of this model it is possible to ascertain, easily and with great accuracy, the mean temperature of any hour of any month of the year. The data forming the basis of the construction are those obtained at the Boston station of the United States Weather Bureau during the period 1890–1905. The total number of observations used was 131,472. The modelling of climatological data in clay or plaster of paris is a new idea, and such models are likely to be of value in the climatological instruction of the future.

Although the committee of scientists appointed to determine the cause of the Paris flood with a view of preventing its future reoccurrence has not yet made its report, many authorities agree that the real cause was a geological rather than a meteorological one. The area drained by the Seine consists of a light soil, which, because of the gentle slopes, usually absorbs most precipitation, even though it be heavy or sudden. At the time of the recent heavy rains, however, the soil was either frozen or was saturated by previous rains, making its surface practically impenetrable to further moisture. The removal of the forests in late years from the higher regions of the river basin may or may not have been a contributory cause of the flood. As it occurred in the winter, vegetation could have but its minimum influence in checking the flow. The heavy and long-continued rains preceding the flood were general throughout the whole region, and because of the condition of the ground the run-off was rapid.

In the international observations of upper

air conditions made on May 18, 19 and 20, Blue Hill Observatory and the United States Weather Bureau furnished the American contribution. The former institution sent up pilot balloons at the observatory and sounding balloons at Pittsfield, Mass., while the Weather Bureau made their usual kite flights at Mount Weather and sent up sounding balloons at Omaha, Nebr. After ascending to a height of about eleven kilometers and passing through air at a temperature of about — 50° Centigrade, one of the four balloons sent up from Pittsfield descended in the Atlantic Ocean just east of Block Island, where it was recovered by the crew of a fishing schooner.

ANDREW H. PALMER
BLUE HILL OBSERVATORY,
HYDE PARK, MASS.,
May 26, 1910

SPECIAL ARTICLES

A SIMPLE AND ECONOMICAL AQUARIUM AERATOR

A SUCCESSFUL aquarium is a very rare object in undergraduate biological laboratories. The difficulties to be overcome in running an aquarium are generally thought to be so great that few are ever started; and if an animal happens to survive, it is usually considered an exceptional or an accidental case. There are, of course, good reasons for such a small number of aquaria. In the long run the various causes of non-success may generally be traced to two fundamental causes. These are insufficiency of food, and an insufficient supply of oxygen. In many cases the first of these defects is remedied by removing the second—an insufficient supply of oxygen. For when the food of an animal consists of living organisms, it is tolerably certain that there must be about the same amount of oxygen in the water for the food organisms to develop as is needed by the animal that feeds upon them. In other words, whenever the conditions are such that the food organisms can grow, the animal feeding upon them is also pretty certain to be able to live. Our chief concern seems to be therefore to establish a proper supply of oxygen to the water, and then knowing the food habits of the animal which we wish to put in the aquarium, we should not experience any great difficulty in keeping the animal alive.

There are many ways of aerating an aquarium, as might be expected, but there are always certain drawbacks, either in the simplicity of the apparatus, or in the economy of running it, or again in the irregularity of its action. The apparatus described below is the best which has yet come to my notice, as far as simplicity, economy and regularity of delivery of air are concerned. The apparatus is in use in the writer's laboratory and is giving perfect satisfaction on the three scores mentioned above, in addition to the important one of keeping the animals alive.

Before describing the apparatus it may be well to say that the aquarium should be stocked with water from the pond or stream from which the animal was taken, and not with "city water." The latter is often treated with chemicals to render it more fit for domestic use, as the precipitation of suspended clay by means of alum, etc. Water which has undergone this treatment is sometimes deleterious to animals, especially the lower forms.

Description of the Apparatus.—The tube *A* is of rubber and connects the aerator with the hydrant. Tube *B* is the "mixer." It conveys the water from *A* to the bottle *E*. As the water passes *a* and *b*, which are small open side branches in *B*, a quantity of air is sucked in and carried with the water into the bottle *E*. To obtain the maximum efficiency of the water as carrier of air, the tube *B* is drawn out to fine bore and bent at *c* and *d* in the form shown. The small bore causes all the water which passes down *B* to form drops filling the whole bore of *B*. Otherwise much of the water would run down the sides of the tube without pushing a quantity of air ahead of it. The tube *C* is of glass, or glass and rubber, as convenient, and carries the water brought down *B* into the aquarium through the opening *k*. The bulb *g* is for the purpose of preventing drops of water (which occasionally splash against *f*) from passing into the aquarium. The tube *D* is of glass and is what is known as a constant level siphon. Its purpose is to carry out the water which is col-